

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): A method of assessing *de novo* fatty acid synthesis in a cell, ~~an organism or a tissue of an organism, comprising quantifying a marker of~~ *de novo* fatty acid synthesis in a biological sample from the organism, wherein the biological sample is a blood product, and wherein the marker of *de novo* fatty acid synthesis comprises:

(a) palmitoleic acid or both palmitoleic acid and palmitic acid quantified from the free fatty acid fraction of the blood product, wherein the method is a method to assess *de novo* fatty acid synthesis in adipose tissue; or

(b) palmitoleic acid or both palmitoleic acid and palmitic acid quantified from the phosphatidylcholine or cholesterol ester fraction of the blood product, wherein the method is a method to assess *de novo* fatty acid synthesis in liver tissue.

~~palmitoleic acid, vaccenic acid, palmitic acid, stearic acid, oleic acid, myristic acid, n7 fatty acids, n9 fatty acids, all saturated fatty acids, or a combination of any two or more of these, and wherein the marker of~~ *de novo* fatty acid synthesis is measured in a specific lipid category.

Claims 2-7 (cancelled)

Claim 8 (currently amended): The method of claim 1, wherein the biological sample is a ~~liver sample, a plasma sample, an adipose sample, or a heart sample.~~

Claim 9 (cancelled)

Claim 10 (withdrawn-currently amended): The method of claim [[9]]1 wherein the marker of *de novo* fatty acid synthesis is quantified from the free fatty acid fraction of the blood product and the method is a method to assess *de novo* fatty acid synthesis in adipose tissue.

Claim 11 (currently amended): The method of claim [[9]]1 wherein the marker of *de novo* fatty acid synthesis is quantified from the phosphatidylcholine, triacylglyceride, or cholesterol ester fraction of the blood product, and the method is a method to assess *de novo* fatty acid synthesis in liver tissue.

Claim 12 (currently amended): The method of claim 1, comprising quantifying both palmitoleic acid and palmitic acid in a biological sample from the organism.

Claim 13 (original): The method of claim 12, further comprising generating a ratio indicator of *de novo* fatty acid synthesis, wherein the ratio indicator is the ratio of the quantity of palmitoleic acid to the quantity of palmitic acid.

Claim 14 (original): The method of claim 13, further comprising comparing the ratio indicator from the biological sample with a ratio indicator from a baseline or control sample.

Claims 15-20 (cancelled)

Claim 21 (original): The method of claim 1, wherein the method is

- (1) a method to determine if a pharmaceutical, nutritional, genetic, toxicological or environmental treatment, regimen or dosage influences *de novo* fatty acid synthesis;
- (2) a method to assess a therapeutic or pharmaceutical agent for its potential effectiveness, efficacy or side effects relating to *de novo* fatty acid synthesis; or
- (3) a method to screen individuals for compatibility or incompatibility with a pharmaceutical, nutritional, toxicological or environmental treatment.

Claim 22 (original): The method of claim 1, comprising quantifying palmitoleic acid in a biological sample from the organism.

Claims 23-25 (cancelled)

Claim 26 (original): The method of claim 1, wherein the method is a method of assessing a change in the *de novo* fatty acid synthesis in the organism, and wherein the method comprises

taking at least two biological samples from the organism, wherein the two samples are taken before and after an event.

Claim 27 (original): The method of claim 26, wherein the event comprises passage of time, treatment with a therapeutic agent, treatment with a pharmaceutical agent, treatment with a nutritional regimen, treatment with a genetic modification, exposure to a toxic or potentially toxic compound, exposure to an environmental condition, treatment with a laboratory procedure, exercise, or the appearance of a phenotypic state.

Claim 28 (original): The method of claim 1, wherein the quantity of the marker of *de novo* fatty acid synthesis is correlated to a propensity, risk, or metabolic basis for weight gain or loss of the organism, and the method is a method for determining the propensity, risk, or metabolic basis for weight gain or loss of the organism.

Claim 29 (withdrawn): The method of claim 28, further comprising correlating the quantity of the marker of *de novo* fatty acid synthesis with *de novo* fatty acid synthesis in adipose, wherein the marker of *de novo* fatty acid synthesis is quantified from the free fatty acid fraction of a blood product.

Claim 30 (currently amended): The method of claim 29, further comprising correlating the quantity of the marker of *de novo* fatty acid synthesis with *de novo* fatty acid synthesis in the liver, wherein the marker of *de novo* fatty acid synthesis is quantified from the phosphatidylcholine, triacylglyceride, or cholesterol ester fraction of a blood product.

Claim 31 (original): The method of claim 28, which is a method of determining whether a treatment or intervention will cause weight gain or loss, further comprising taking at least two biological samples from the organism, wherein the two samples are taken before and after a nutritional, pharmacological, genetic, environmental or toxicological treatment or intervention, and wherein a change in the quantity of the marker of *de novo* fatty acid synthesis is correlated with a likelihood of weight gain or loss.

Claim 32 (original): The method of claim 28, further comprising comparing the assessment of *de novo* fatty acid synthesis from the organism to an assessment of *de novo* fatty acid synthesis from another organism or compiled for a population of organisms.

Claim 33 (original): The method of claim 28, wherein the quantity of the marker of *de novo* fatty acid synthesis is reported as an absolute or relative concentration.

Claim 34 (original): The method of claim 33, wherein correlating the quantity of the marker of *de novo* fatty acid synthesis comprises using the absolute or relative concentration of the marker of *de novo* fatty acid synthesis in a mathematical or statistical equation for determining the amount of *de novo* fatty acid synthesis.

Claim 35 (original): The method of claim 1, wherein the quantity of the marker of *de novo* fatty acid synthesis is correlated to a propensity, risk, or metabolic basis for obesity of the organism, and the method is a method for determining the propensity, risk, or metabolic basis for obesity of the organism.

Claim 36 (withdrawn): The method of claim 35, further comprising correlating the quantity of the marker of *de novo* fatty acid synthesis with *de novo* fatty acid synthesis in adipose, wherein the marker of *de novo* fatty acid synthesis is quantified from the free fatty acid fraction of a blood product.

Claim 37 (currently amended): The method of claim [[36]]35, further comprising correlating the quantity of the marker of *de novo* fatty acid synthesis with *de novo* fatty acid synthesis in the liver, wherein the marker of *de novo* fatty acid synthesis is quantified from the phosphatidylcholine, triacylglyceride, or cholesterol ester fraction of a blood product.

Claim 38 (withdrawn): The method of claim 36, which is a method of determining whether a treatment will cause obesity, further comprising taking at least two biological samples from the organism, wherein the two samples are taken before and after a nutritional, pharmacological, genetic, environmental or toxicological intervention treatment, and wherein a change in the quantity of the marker of *de novo* fatty acid synthesis is correlated with a likelihood of obesity.

Claim 39 (withdrawn): The method of claim 36, further comprising comparing the assessment of *de novo* fatty acid synthesis from the organism to an assessment of *de novo* fatty acid synthesis from another organism or compiled for a population of organisms.

Claim 40 (withdrawn): The method of claim 36, wherein the quantity of the marker of *de novo* fatty acid synthesis is reported as an absolute or relative concentration.

Claim 41 (withdrawn): The method of claim 40, wherein correlating the quantity of the marker of *de novo* fatty acid synthesis comprises using the absolute or relative concentration of the marker of *de novo* fatty acid synthesis in a mathematical or statistical equation for determining the amount of *de novo* fatty acid synthesis.

Claims 42-60 (cancelled)

Claim 61 (original): The method of claim 1, wherein the method is a method of assessing an activity of at least one enzyme involved in *de novo* fatty acid, further comprising correlating the quantity of the marker with the activity of the at least one enzyme.

Claim 62 (original): The method of claim 1, further comprising generating a printed report.

Claim 63 (new): The method of claim 11, wherein the marker of *de novo* fatty acid synthesis is quantified from the cholesterol ester fraction of the blood product.